

**Local DNA Opening by PNA Creates Activated Nucleation Site for
Both RecA-coated Complementary Single-stranded Probes**

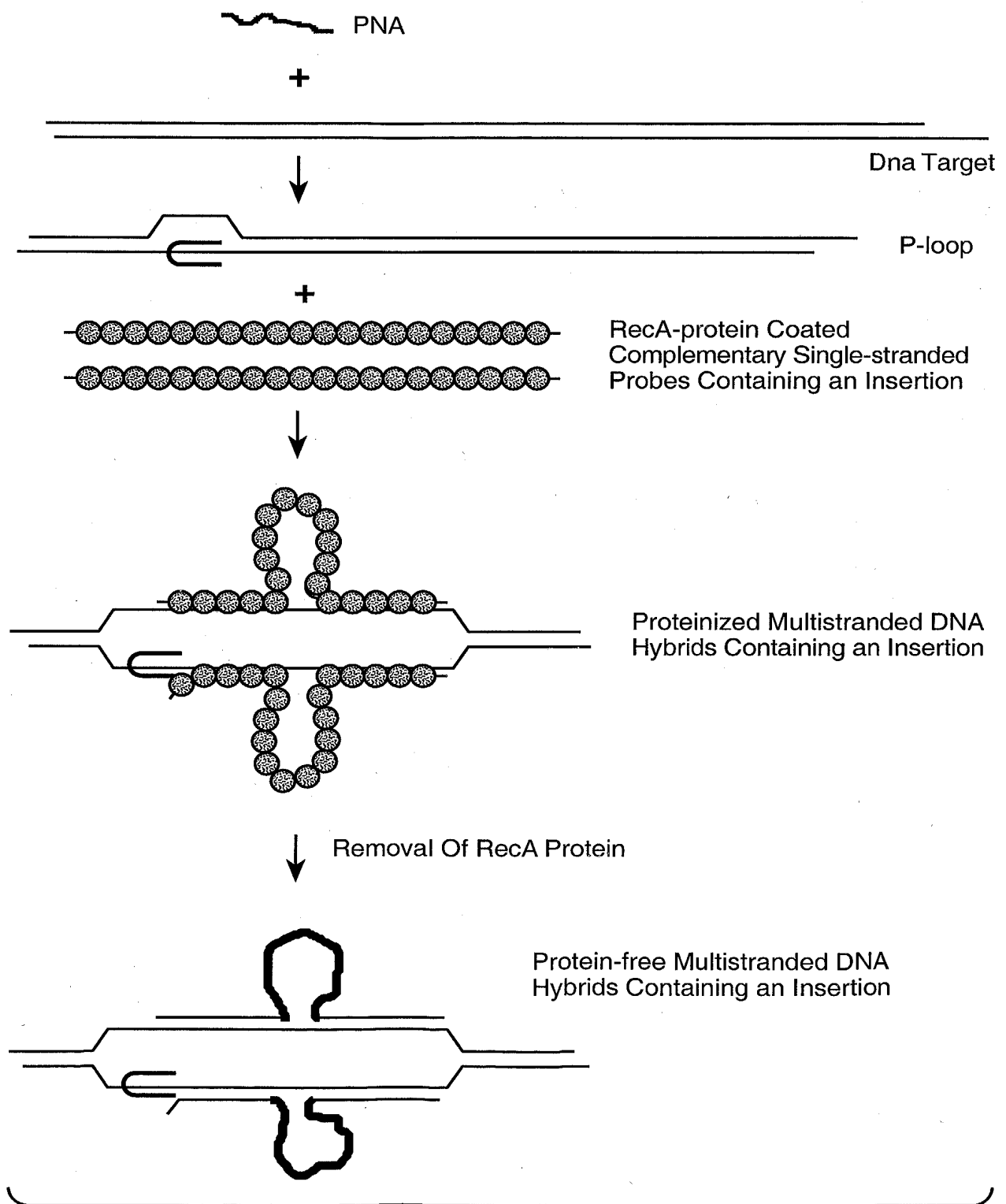


FIG. 1A

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Stabilization of Single D-loop Hybrids by Analog Probes:

When the PNA Binding Site is Within the Probe-target Hybrid, PNA Can Stabilize Single D-loops by Trapping the Strand Exchange Process.

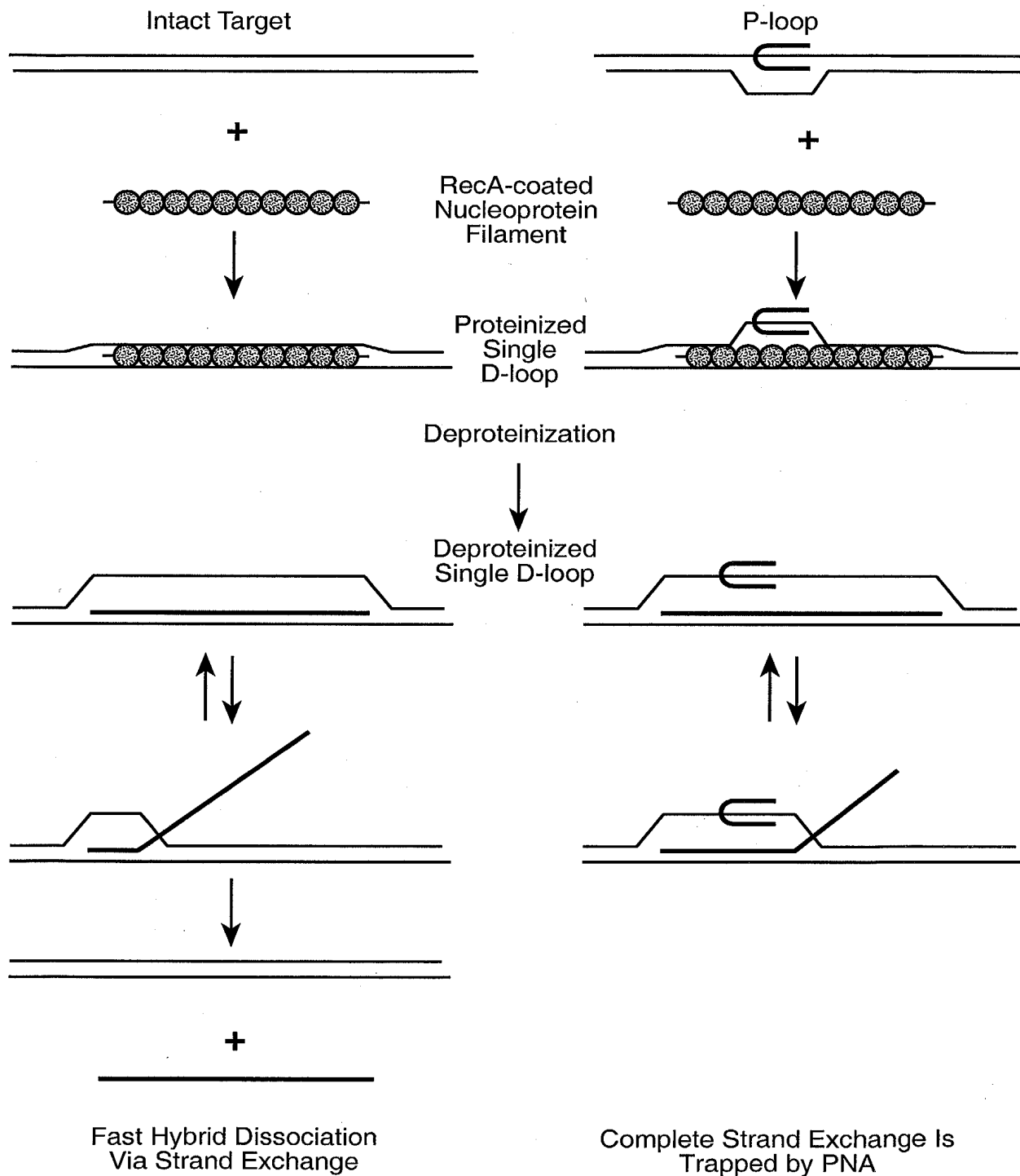
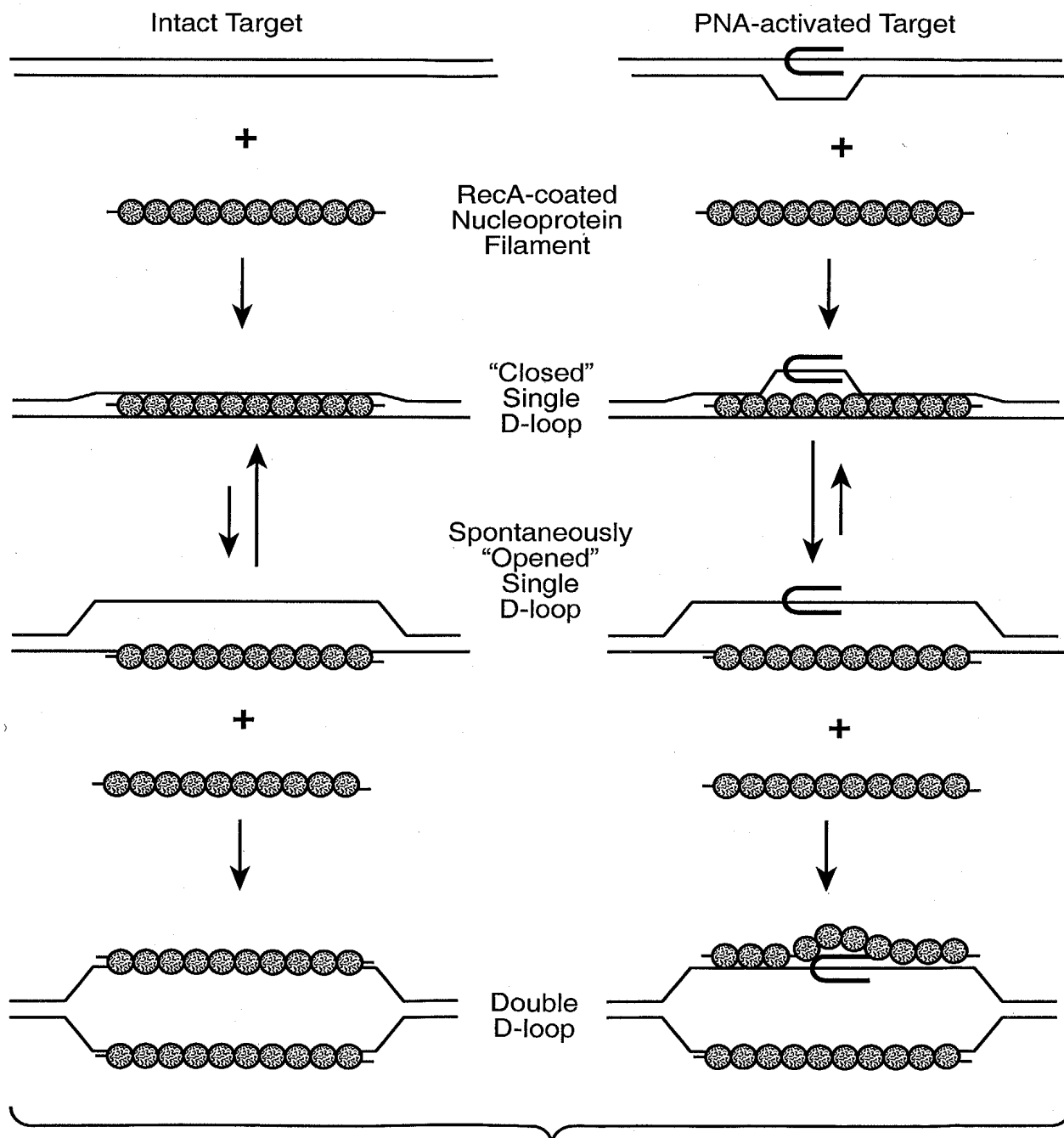


FIG. 1B

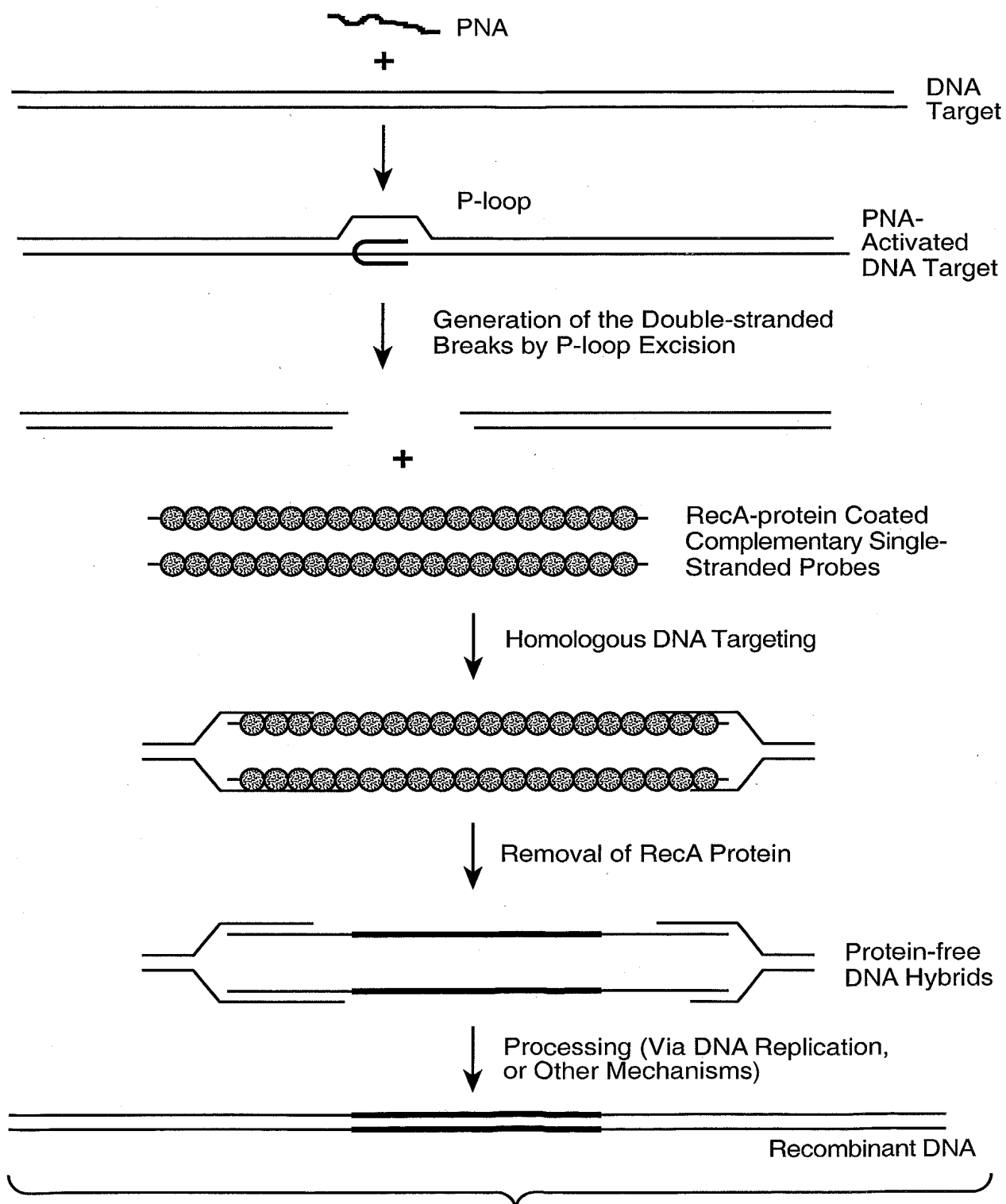
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PNA Activates the Binding of the Second Coming RecA-coated Single-stranded Probe Via Stabilization of the "Opened" State of the D-loop Formed by the First Coming RecA-coated Single-Stranded Probe.

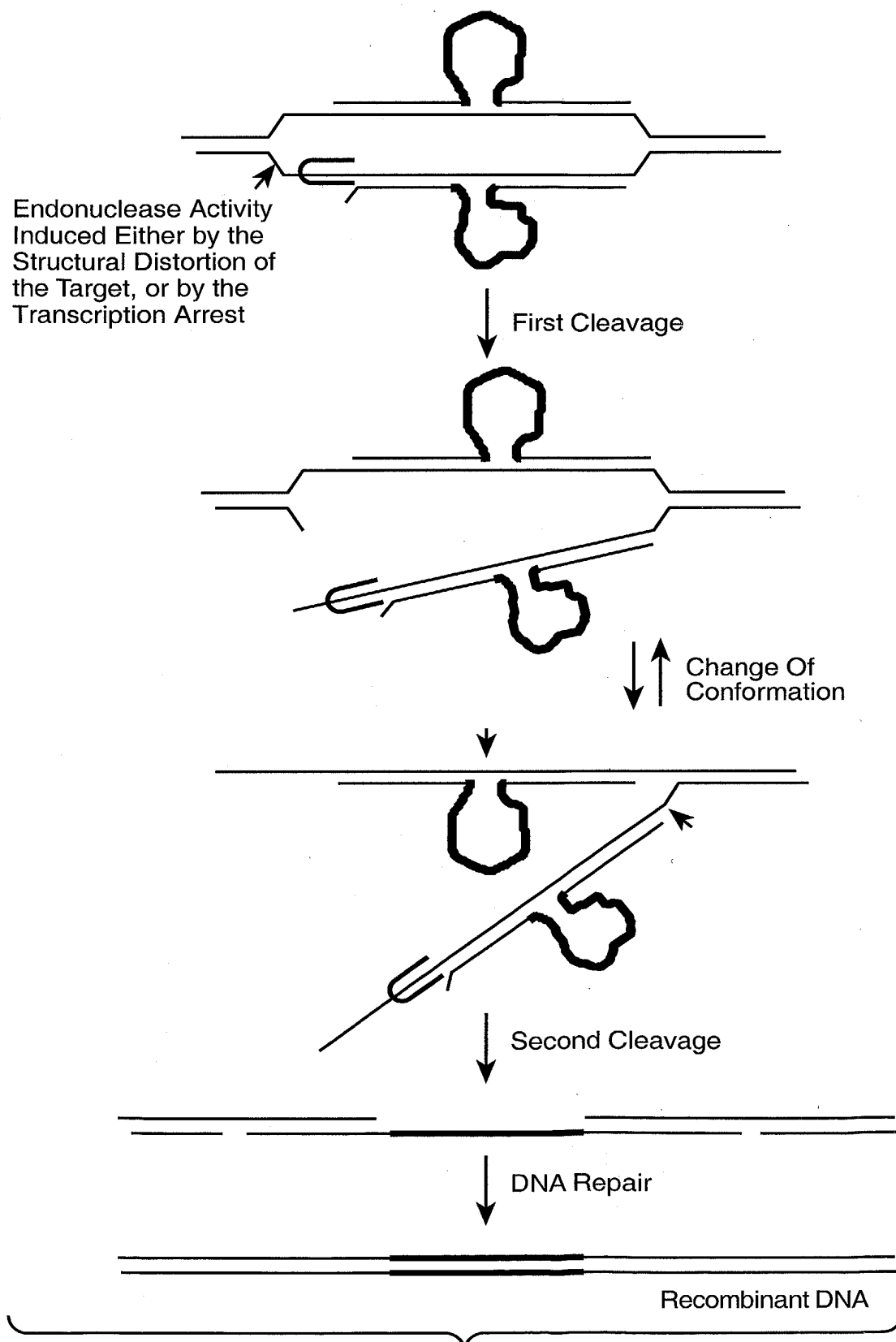
**FIG._1C**

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**PNA-directed Double-stranded Break In The Target DNA
Followed By Homologous DNA Targeting**

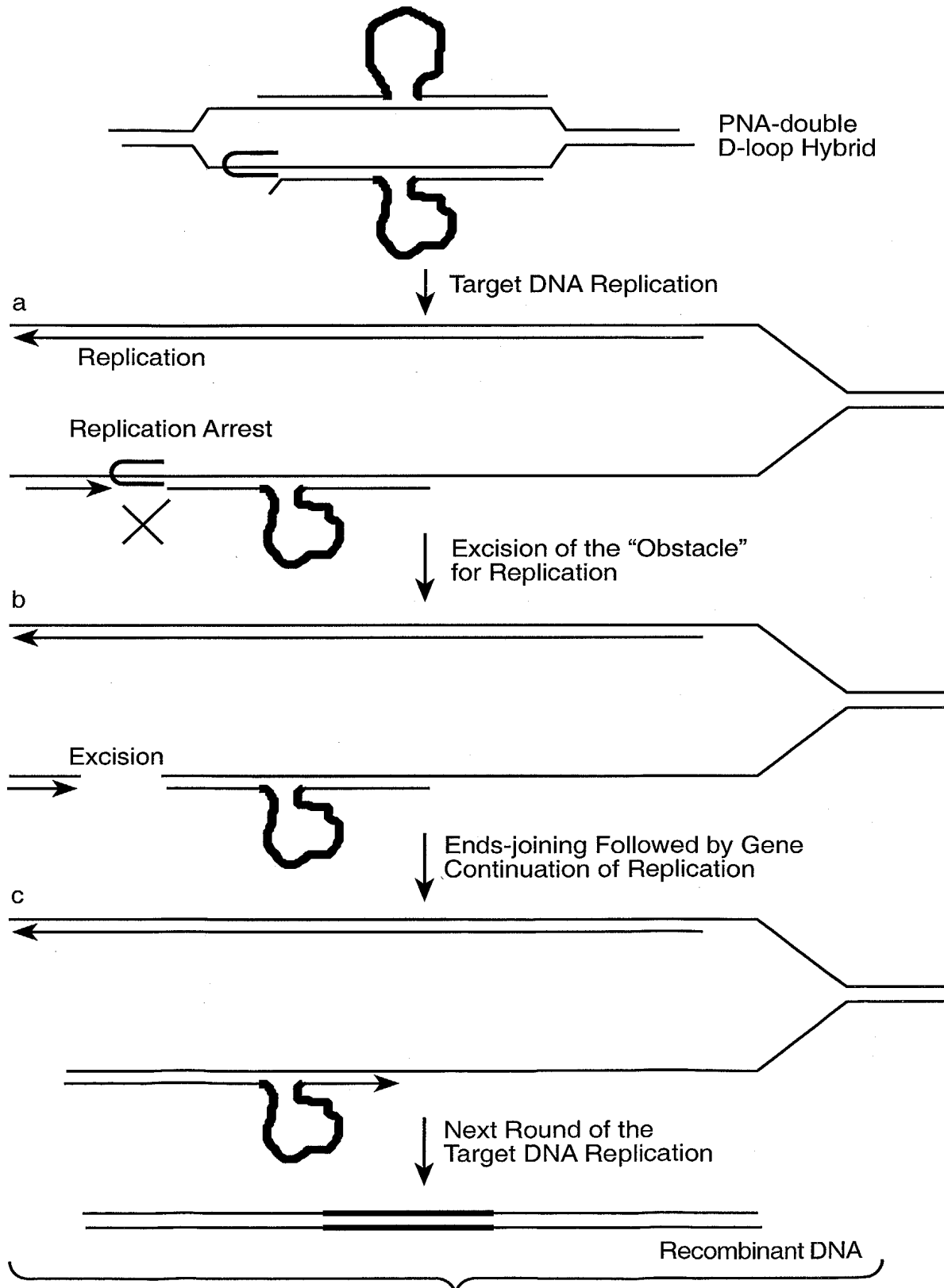
**FIG. 2**

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Processing of the Hybrids by Strand Excision Followed by DNA Repair**FIG._3A**

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**Hybrid Processing Mediated by Target DNA Replication
when the PNA Site is Outside the Heterologous Insert Site**

**FIG. 3B**

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**Hybrid Processing Mediated by Target DNA Replication
when the PNA Site is Inside the Heterologous Insert Site**

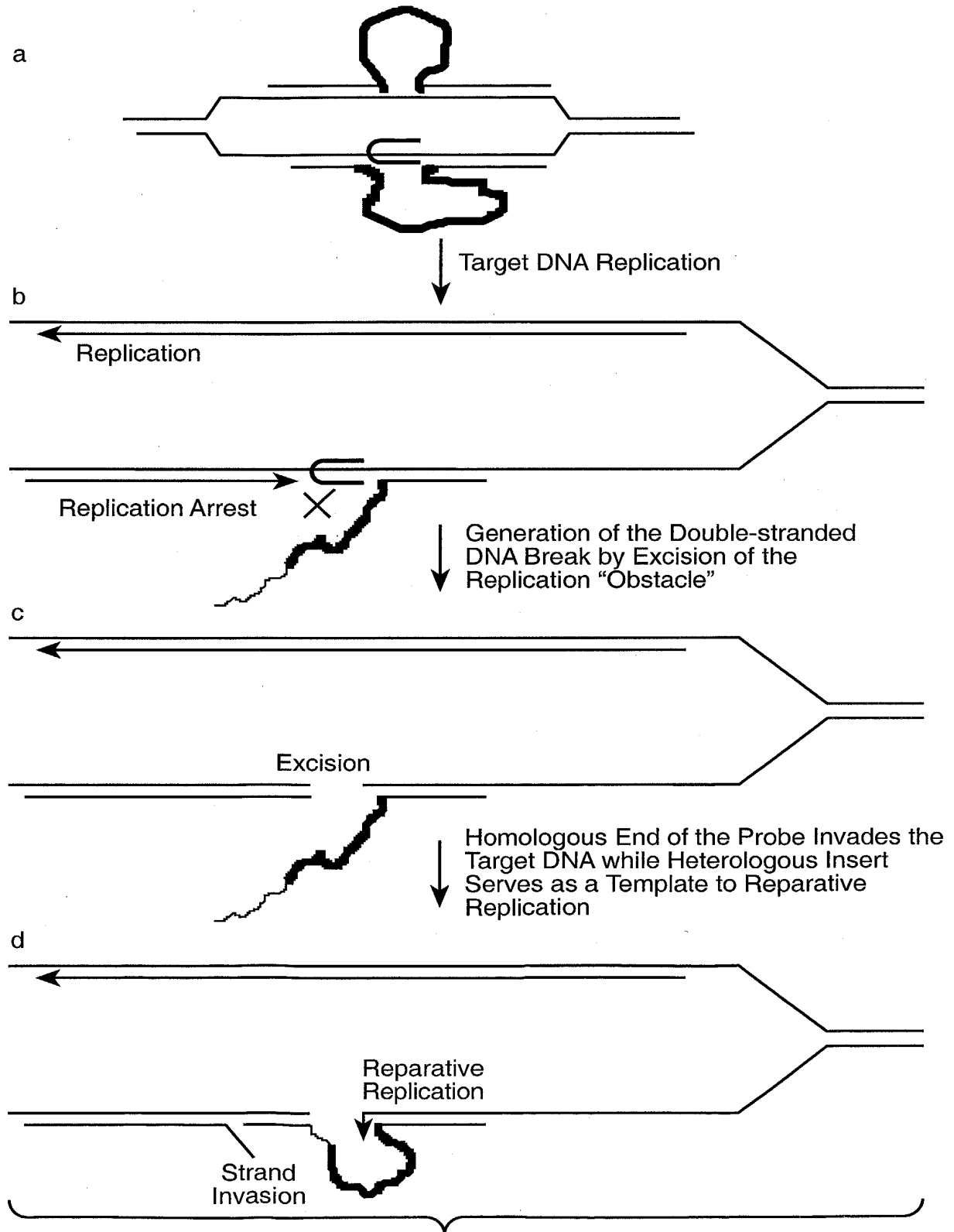


FIG._3C-1

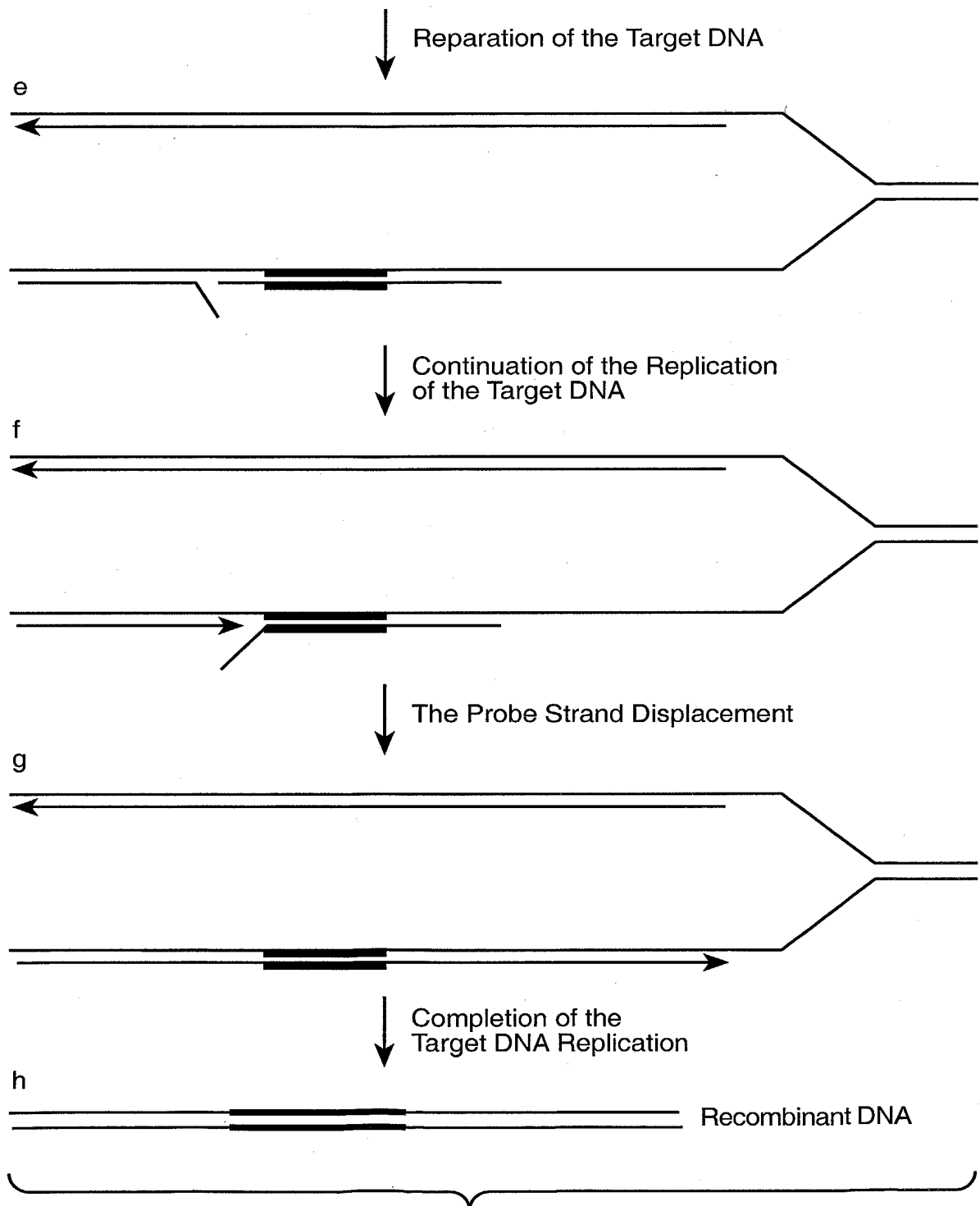


FIG._3C-2

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**Cloning of Linear (Including Genomic) DNA Fragments
Mediated by PNA Activated Homologous DNA Targeting**

Restriction Fragments of Genomic DNA

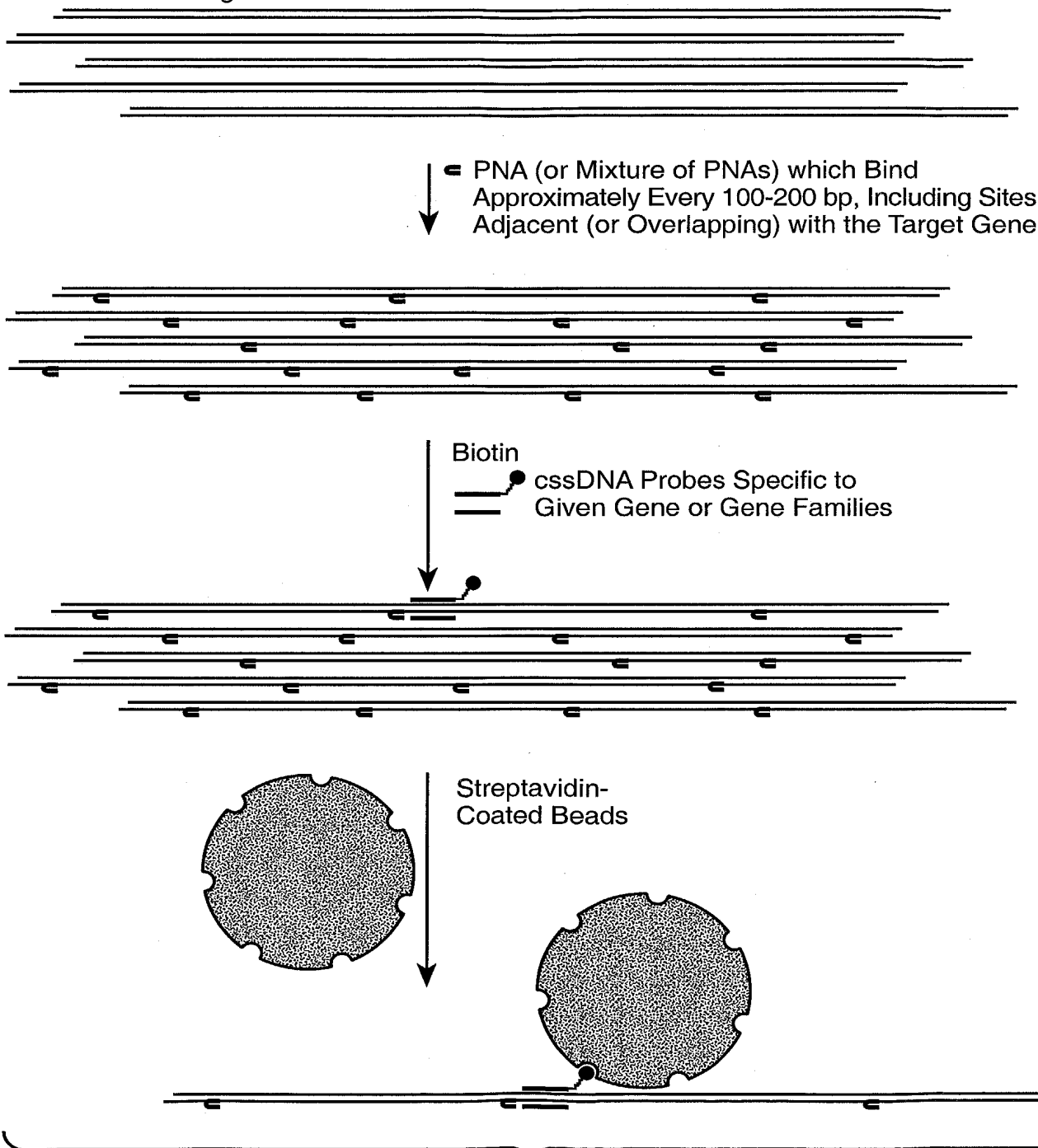


FIG. 4A

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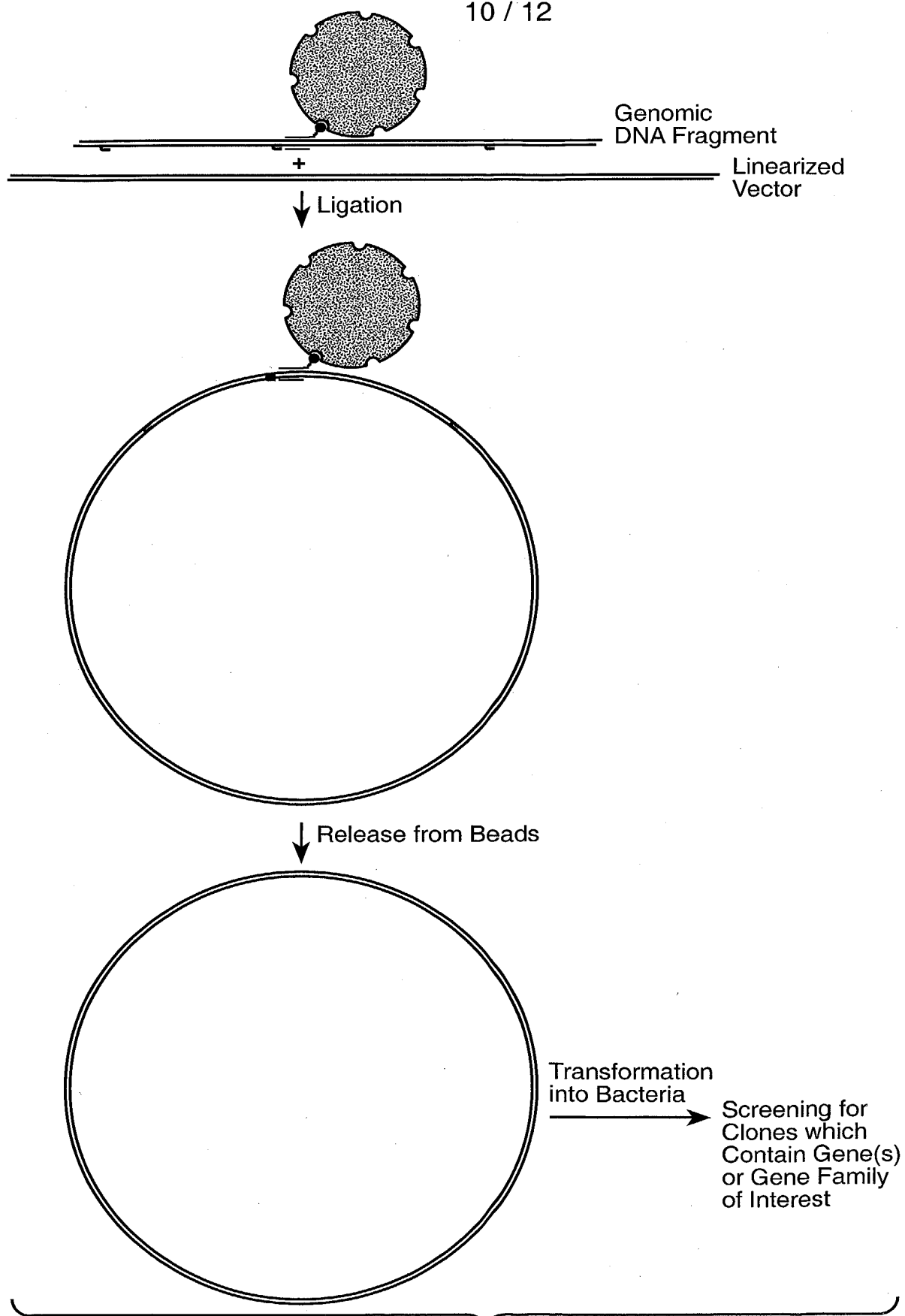
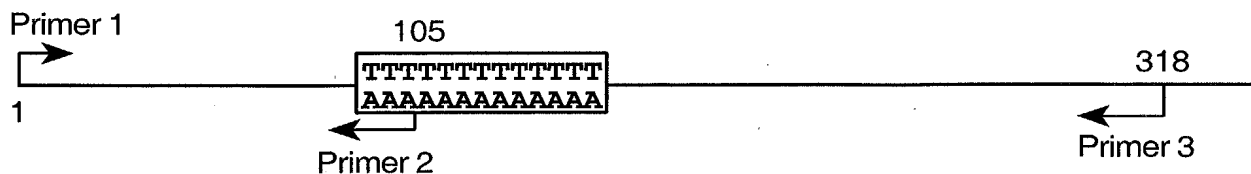


FIG. 4B

Scheme for Targeting of Human HPRT Gene

Fragment of Human HPRT Gene



Lys-TTTTTTTTTTT-Lys
PNA

Probe 1-2

Probe 1-3

FIG._5A

Targeting of the Human HPRT Gene Fragment
with the Probe with the PNA Binding Site Inside It

Special Target	+		-
PNA	+	-	+
RecA	+	-	+

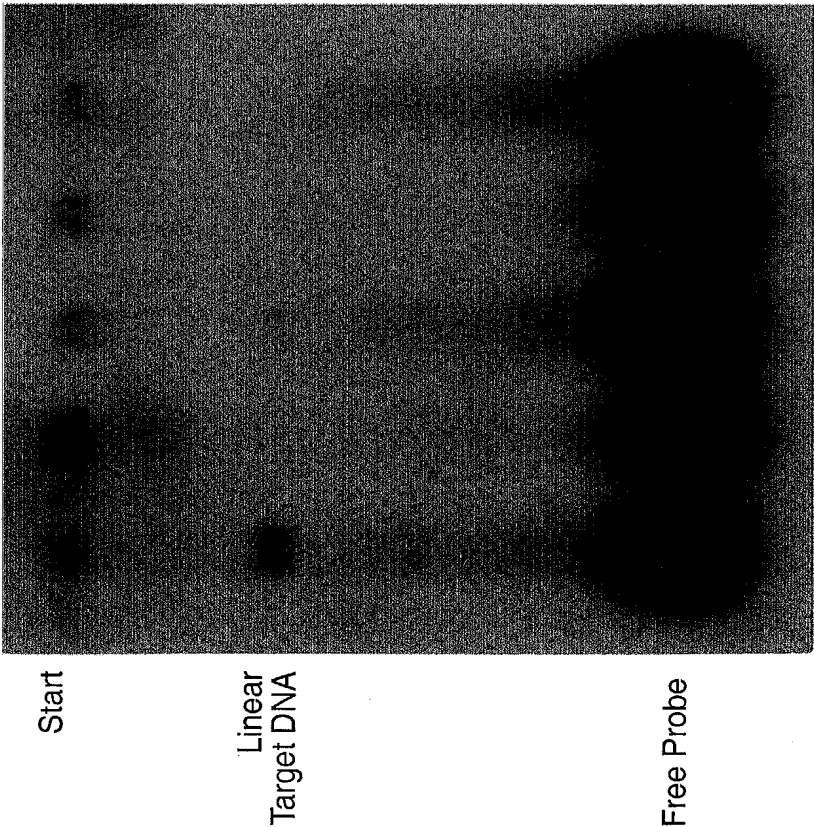


FIG. 5B

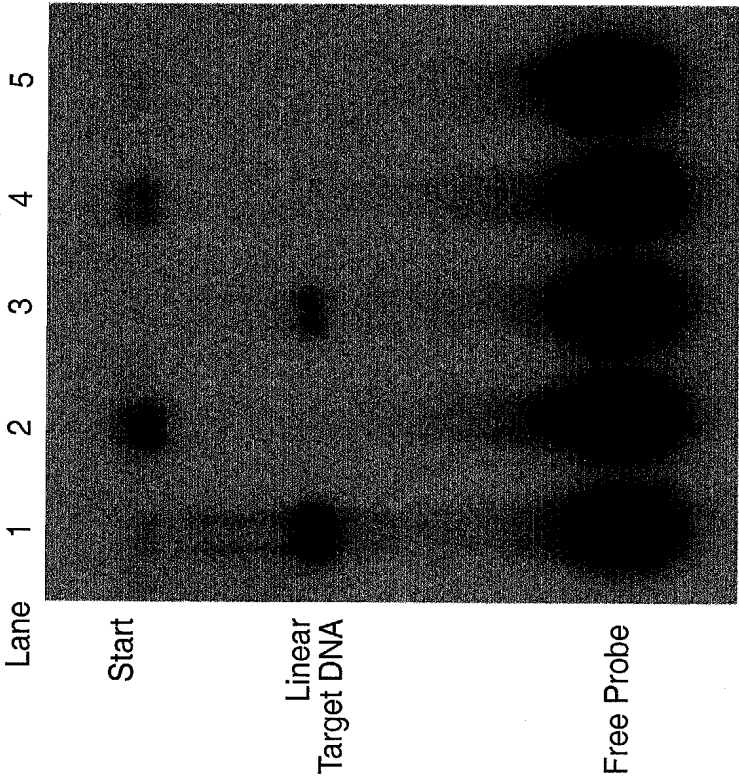


FIG. 5C